

Material Safety Data for: Propylene Glycol

1. PRODUCT IDENTIFICATION

Name	1,2-dihydroxypropane
Synonyms	propane-1,2-diol, 1,2-propylene glycol
CAS#	57-55-6
EC#	200-338-0
Product Uses	non-toxic antifreeze, manufacture of polyester resins & other products

2. INGREDIENTS

	%	TWAEV / TLV ppm / mg/m ³	LD ₅₀ ORAL	(mg/kg) SKIN	LC ₅₀ ppm INHALATION
1,2-dihydroxypropane	100%	not listed	14,800	20,800	not known

3. (a) HAZARDS SUMMARY

Hazards, Quick Guide:	<i>not hazardous</i>
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Canada – WHMIS

Key:

not controlled under WHMIS

B 2 – Flash Point <38°C, **B 3** – Flash Point >38°C & <93°C

D 1 – Immediately Toxic, **D 2** – Chronic Toxicity

C – Oxidising Substance, **E** – Corrosive

U.S.A. – HMIS

Key:

Health – 0, Fire – 1, Reactivity – 0

0=minimal, 1=slight, 2=moderate, 3=serious, 4=severe

3. (b) HAZARDS – TOXICITY

Effects, Acute Exposure

Skin Contact	little to no effect
Skin Absorption	slight; no toxic effects likely by this route
Eye Contact	little to no effect; <i>may sting very briefly, but subsides almost immediately</i>
Inhalation	vapour or mist had little if any effect
Ingestion	little to no effect; also little effect in experimental long-term inhalation studies

Effects, Chronic Exposure

General	prolonged skin exposure has caused irritation in <i>16% of dermatitis patients</i> ; any irritation seen in normal people appears to be caused by local osmotic skin dehydration, disappearing rapidly after removal of propylene glycol
Sensitising	not a sensitiser in humans or animals
Carcinogen/Tumorigen	not considered a tumorigen or a carcinogen in humans or animals
Reproductive Effect	no known effect in humans or animals
Mutagen	no known effect on humans or animals
Synergistic With	not known
LD ₅₀ (oral)	20,000mg/kg (rat), 22,000mg/kg (mouse & dog), 14,800 & 18,500mg/kg (rabbit), 19,000mg/kg (guinea pig)
LD ₅₀ (skin)	20,800mg/kg (rabbit)
LC ₅₀ (inhalation)	not known

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4. FIRST AID

- SKIN: Wash with plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.
- EYES: Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is irritation.
- INHALATION: Remove from contaminated area promptly. **CAUTION: Rescuer must not endanger himself!** If breathing stops, administer artificial respiration and seek medical aid promptly.
- INGESTION: Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

5. PHYSICAL PROPERTIES

Odour & Appearance	clear, colourless, odourless, viscous, hygroscopic liquid
Odour Threshold	not known - odourless
Vapour Pressure	0.08mmHg / 0.011kPa (20°C / 68°F)
Evaporation Rate (<i>Butyl Acetate = 1</i>)	0.01
Vapour Density (air = 1)	2.5
Boiling Range	188°C / 370°F
Freezing Point	-60°C / -76°F – <i>supercools readily</i>
Specific Gravity	1.037 (20/20°C)
Water Solubility	complete
Also soluble in	all polar organic solvents and benzene, limited solubility in aliphatic hydrocarbons
Viscosity	56centipoise (20°C / 68°F)
pH	none – (<i>does not liberate hydrogen ions when dissolved</i>)
Molecular Weight	76 grams per mole

6. FLAMMABILITY & FIRE FIGHTING

Flash Point	99°C / 210°F (closed cup); also given as 103°C / 217°F
Autoignition Temperature	371°C / 700°F
Flammable Limits	2.6% – 12.5%
Combustion Products	carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
Firefighting Precautions	alcohol-resistant foam, dry chemical, water fog, water spray; firefighters must wear SCBA
Static Charge Accumulation	cannot accumulate a static charge on agitation or pumping

7. STABILITY / REACTIVITY

Dangerously Reactive With	strong oxidising agents
Also Reactive With	attacks polyvinyl chloride; elastomers like Dacron & epoxy are attacked above 95°C
Stability	stable; will not polymerize
Decomposes in Presence of	not known
Decomposition Products	none apart from Hazardous Combustion Products
Sensitive to Mechanical Impact	no

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8. PROTECTIVE EQUIPMENT / EXPOSURE CONTROL

ACGIH TLV	not listed
OSHA PEL	not listed
STEL	not listed
Ventilation	no special ventilation required
Hands	no special protective gloves required
Eyes	safety glasses with side shields – <i>always protect the eyes</i>
Clothing	no special protective clothing required

9. HANDLING & STORAGE

Store in a dry environment, away from open flame and oxidising agents. Always ensure that containers, whether empty or full, or part full, are tightly sealed unless in use.

If product is heated above 100°C / 212°F, ensure adequate ventilation and avoid breathing the vapour. Never cut, drill, weld or grind on or near this container. Wash work clothes frequently. An eye bath and safety shower should be available near the workplace.

10. SPILL PROCEDURES

Leak Precaution	dyke to control spillage and prevent environmental contamination
Handling Spill	ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep & pick up using plastic or aluminium shovel, & store in closed containers for recycling or disposal

11. DISPOSAL

Waste Disposal	do not flush to sewer , recycle solvent if possible, if local regulations permit, may be put in sanitary landfill, may be incinerated in approved facility
Containers	Drums should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use. Pails must be vented and thoroughly dried prior to crushing and recycling. IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5yrs). Steel containers must be inspected, pressure tested & recertified every 5 years. <i>Never cut, drill, weld or grind on or near this container, even if empty</i>

12. ENVIRONMENTAL INFORMATION

Bioaccumulation	this product is not a bioaccumulator
Biodegradation and	this product degrades readily and rapidly in the presence of oxygen; 55-75% degradation in 5 days 78-84% degradation in 20 days
Abiotic Degradation	this product reacts with atmospheric hydroxyl radicals; estimated half-life in air is 32hours
Mobility in soil, water	this product is water soluble and will move readily in soil and water
Aquatic Toxicity	
LC ₅₀ (Fish, 96hr)	23800mg/litre (Cyprinodon variegatus), 51500mg/litre (Oncorhynchus mykiss & Pimephelas promelas),
EC ₅₀ (Crustacea, 24hr)	10,000mg/litre (Artemia salina), 34,400 & 43,500mg/litre (Daphnia magna)
EC ₅₀ (Algae)	19,000mg/litre (Selenastrum capricornutum), 19,100mg/litre (Skeletonema costatum)

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13. TRANSPORT REGULATIONS

<i>Canada TDG</i>	PIN	UN-not regulated for transport
AND	Shipping Name	not regulated for transport
<i>U.S.A. 49 CFR</i>	Class	not regulated for transport
	Packing Group	not regulated for transport
Marine Pollutant		not a marine pollutant

14. EMERGENCY INFORMATION

<i>Canada</i>	Call CANUTEC (collect)	(613) 996-6666
<i>U.S.A.</i>	Call CHEMTREC	(800) 424-9300

15. REGULATIONS

Canada DSL	on inventory
U.S.A. TSCA	on inventory
Europe EINECS	on inventory

Europe Risk Phrases	<i>not classified in Europe</i>
Europe Safety Phrases	<i>not classified in Europe</i>

Allowable Tolerances: Residues of propylene glycol are exempted from the requirement of a tolerance when used as a solvent, cosolvent in accordance with good agricultural practices as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. Propylene glycol is exempted from the requirement of a tolerance when used as a solvent, cosolvent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals.

Atmospheric Standards: This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCMI process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC, considering costs, non air quality health and environmental impact and energy requirements. Propylene glycol is produced, as an intermediate or a final product, by process units covered under this subpart.

State Drinking Water Guidelines: New Hampshire 140,000 ug/l

FIFRA Requirements: As the federal pesticide law FIFRA directs, EPA is conducting a comprehensive review of older pesticides to consider their health and environmental effects and make decisions about their future use. Under this pesticide reregistration program, EPA examines health and safety data for pesticide active ingredients initially registered before November 1, 1984, and determines whether they are eligible for reregistration. In addition, all pesticides must meet the new safety standard of the Food Quality Protection Act of 1996. Pesticides for which EPA had not issued Registration Standards prior to the effective date of FIFRA, as amended in 1988, were divided into three lists based upon their potential for human exposure and other factors, with List B containing pesticides of greater concern and List D pesticides of less concern. Propylene glycol is found on List C. Case No: 3126; Pesticide type: insecticide, fungicide, antimicrobial; Case Status: OPP is reviewing data from the pesticide's producers regarding its human health and/or environmental effects, or OPP is determining the pesticide's eligibility for reregistration and developing the Reregistration Eligibility Decision (RED) document.; Active ingredient (AI): Propylene glycol; Data Call-in (DCI) Date(s): 08/02/93; AI Status: The producers of the pesticide has made commitments to conduct the studies and pay the fees required for reregistration, and are meeting those commitments in a timely manner.

FDA Requirements: Substance added directly to human food affirmed as generally recognized as safe. Propylene glycol used in animal drugs, feeds, and related products is generally recognized as safe when used in accordance with good manufacturing or feeding practice. Propylene glycol used in animal drugs, feeds, and related products is generally recognized as safe (except in cat food) when used in accordance with good manufacturing or feeding practice. Drug products containing certain active ingredients offered over-the-counter (OTC) for certain uses. Propylene glycol is included in pediculicide drug products.

16. PREPARATION INFORMATION

Prepared for Megaloid Laboratories by Peter Bursztyn, (705) 734-1577

With data from RTECS, Haz. Substance Data Base, Cheminfo (CCOHS), IUCLID Datasheets (European Chem. Substance Info. System), & others, as available

Preparation Date: **April 2007** Revision Date: **April 2010**

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